

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) A fuel cell system comprising:
 - a fuel cell for generating power from fuel gas supplied thereto;
 - a supply system for supplying fuel gas to the fuel cell;
 - a recirculation system for recirculating unused fuel gas from the fuel cell, fuel gas in the recirculation system containing nitrogen;
 - a purge valve for purging nitrogen contained in the fuel gas in the recirculation system; and
 - a controller for adjusting a valve opening of the purge valve such that a nitrogen concentration of the fuel gas in the recirculation system is controlled to be maintained at a target nitrogen concentration,
wherein the controller is adapted to:
adjust the valve opening of the purge valve to maintain a flow rate of fuel in a fuel gas passing through the purge valve at a threshold set in accordance with operation conditions of the fuel cell system and the valve opening of the purge valve, by reducing the valve opening of the purge valve if the flow rate of fuel in the fuel gas passing through the purge valve is more than the threshold, and increasing the valve opening of the purge valve if the flow rate of the fuel gas passing through the purge valve is less than the threshold.
2. (Cancelled)
3. (Previously Presented) The fuel cell system according to claim 1, wherein the threshold is set larger as the valve opening of the purge valve becomes larger.
4. (Previously Presented) The fuel cell system according to claim 1, further comprising:

a temperature sensor for detecting temperature of the fuel gas passing through the purge valve, wherein the threshold is set lower as the temperature of the fuel gas detected by the temperature sensor rises.

5. (Previously Presented) The fuel cell system according to claim 1, further comprising:

a pressure sensor for detecting pressure of fuel gas in the supply system, wherein the threshold is set lower as the pressure of the fuel gas detected by the pressure sensor drops.

6. (Previously Presented) The fuel cell system according to claim 1, wherein the flow rate of fuel in the fuel gas passing through the purge valve is obtained from a difference between a supply rate of fuel supplied from the supply system and a consumption rate of fuel gas consumed by the fuel cell.

7. (Previously Presented) The fuel cell system according to claim 6, further comprising:

an ejector provided in the recirculation system, to which the supply system is connected; and

a pressure sensor for detecting a supply pressure of fuel gas supplied to the ejector, wherein the supply rate of fuel supplied from the supply system is calculated based on the supply pressure detected by the pressure sensor.

8. (Previously Presented) The fuel cell system according to claim 7, further comprising:

a temperature sensor for detecting a temperature of fuel gas upstream of the ejector, wherein the supply rate of fuel is calculated based on the temperature of the fuel gas detected by the temperature sensor and the supply pressure thereof detected by the pressure sensor.

9. (Previously Presented) The fuel cell system according to claim 6, further comprising:

a fuel pressure regulator for the fuel gas supplied to the fuel cell;

a valve opening sensor for detecting a valve opening of the fuel pressure regulator;

and

a pressure sensor for detecting pressure of fuel gas upstream of the fuel pressure regulator, wherein the supply rate of fuel is calculated based on the valve opening of the fuel

pressure regulator detected by the valve opening sensor, and the pressure of the fuel gas upstream of the fuel pressure regulator detected by the pressure sensor.

10. (Previously Presented) The fuel cell system according to claim 9, further comprising:

a temperature sensor for detecting temperature of the fuel gas upstream of the fuel pressure regulator, wherein the supply rate of fuel is calculated based on a valve opening degree of the fuel pressure regulator detected by the valve opening sensor, the pressure of the fuel gas upstream of the fuel pressure regulator detected by the pressure sensor, and the temperature of the fuel gas detected by the temperature sensor.

11. (Previously Presented) The fuel cell system according to claim 6, further comprising:

an ammeter for detecting an output current of the fuel cell, wherein the consumption rate of fuel is calculated based on the output current detected by the ammeter.

12. (Previously Presented) The fuel cell system according to claim 6, further comprising:

an ammeter for detecting an output current of the fuel cell; and

a pressure sensor for detecting pressure of fuel gas upstream or downstream of the fuel cell, wherein the controller is provided with a unit for obtaining a variation rate of the pressure of the fuel gas detected by the pressure sensor, and wherein the consumption rate of fuel is calculated based on the output current detected by the ammeter and the variation rate of the pressure of the fuel gas given by the unit of the controller.

13. (Withdrawn) A method for controlling a fuel cell system comprising:

supplying fuel gas to a fuel cell;

re-circulating unused fuel gas from the fuel cell by a recirculation system, fuel gas in the recirculation system containing nitrogen;

purging nitrogen by a purge valve; and

using a controller, adjusting a valve opening of the purge valve to maintain a rate of flow of fuel in a fuel gas passing through the purge valve at a threshold set in accordance with operation conditions of the fuel cell system and the valve opening of the purge valve so as to keep a nitrogen concentration of the fuel gas in the recirculation system constant by reducing

the valve opening of the purge valve if the rate of flow of fuel in the fuel gas passing through the purge valve is more than the threshold, and increasing the valve opening of the purge valve if the rate of flow of fuel in the fuel gas passing through the purge valve is less than the threshold.

14. (New) A fuel cell system comprising:

- a fuel cell for generating power from fuel gas supplied thereto;
- a supply system for supplying fuel gas to the fuel cell;
- a recirculation system for recirculating unused fuel gas from the fuel cell, fuel gas in the recirculation system containing nitrogen;
- a purge valve for purging nitrogen contained in the fuel gas in the recirculation system; and
- a controller for adjusting a valve opening of the purge valve such that a nitrogen concentration of the fuel gas in the recirculation system is controlled to be maintained at a target nitrogen concentration.

15. (New) The fuel cell system according to claim 14, wherein the controller is adapted to:

reduce the valve opening of the purge valve if the flow rate of fuel in the fuel gas passing through the purge valve is more than a threshold set in accordance with operating conditions of the fuel cell system and the valve opening of the purge valve, and increase the valve opening of the purge valve if the flow rate of the fuel gas passing through the purge valve is less than the threshold.

16. (New) The fuel cell system according to claim 15, wherein the threshold is set larger as the valve opening of the purge valve becomes larger.

17. (New) The fuel cell system according to claim 15, further comprising:

a temperature sensor for detecting temperature of the fuel gas passing through the purge valve, wherein the threshold is set lower as the temperature of the fuel gas detected by the temperature sensor rises.

18. (New) The fuel cell system according to claim 15, further comprising:
a pressure sensor for detecting pressure of fuel gas in the supply system, wherein the threshold is set lower as the pressure of the fuel gas detected by the pressure sensor drops.
19. (New) The fuel cell system according to claim 14, wherein the flow rate of fuel in the fuel gas passing through the purge valve is obtained from a difference between a supply rate of fuel supplied from the supply system and a consumption rate of fuel gas consumed by the fuel cell.
20. (New) The fuel cell system according to claim 19, further comprising:
an ejector provided in the recirculation system, to which the supply system is connected; and
a pressure sensor for detecting a supply pressure of fuel gas supplied to the ejector, wherein the supply rate of fuel supplied from the supply system is calculated based on the supply pressure detected by the pressure sensor.
21. (New) The fuel cell system according to claim 20, further comprising:
a temperature sensor for detecting a temperature of fuel gas upstream of the ejector, wherein the supply rate of fuel is calculated based on the temperature of the fuel gas detected by the temperature sensor and the supply pressure thereof detected by the pressure sensor.
22. (New) The fuel cell system according to claim 19, further comprising:
a fuel pressure regulator for the fuel gas supplied to the fuel cell;
a valve opening sensor for detecting a valve opening of the fuel pressure regulator;
and
a pressure sensor for detecting pressure of fuel gas upstream of the fuel pressure regulator, wherein the supply rate of fuel is calculated based on the valve opening of the fuel pressure regulator detected by the valve opening sensor, and the pressure of the fuel gas upstream of the fuel pressure regulator detected by the pressure sensor.

23. (New) The fuel cell system according to claim 22, further comprising:
a temperature sensor for detecting temperature of the fuel gas upstream of the fuel pressure regulator, wherein the supply rate of fuel is calculated based on a valve opening degree of the fuel pressure regulator detected by the valve opening sensor, the pressure of the fuel gas upstream of the fuel pressure regulator detected by the pressure sensor, and the temperature of the fuel gas detected by the temperature sensor.
24. (New) The fuel cell system according to claim 19, further comprising:
an ammeter for detecting an output current of the fuel cell, wherein the consumption rate of fuel is calculated based on the output current detected by the ammeter.
25. (New) The fuel cell system according to claim 19, further comprising:
an ammeter for detecting an output current of the fuel cell; and
a pressure sensor for detecting pressure of fuel gas upstream or downstream of the fuel cell, wherein the controller is provided with a unit for obtaining a variation rate of the pressure of the fuel gas detected by the pressure sensor, and wherein the consumption rate of fuel is calculated based on the output current detected by the ammeter and the variation rate of the pressure of the fuel gas given by the unit of the controller.